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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,953	12/15/2003	Ziyad S. Hakura	NVID-080/00US	5537

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EXAMINER

RICHER, AARON M

ART UNIT PAPER NUMBER

2628

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/736,953	<b>Applicant(s)</b> HAKURA, ZIYAD S.	
	<b>Examiner</b> Aaron M. Richer	<b>Art Unit</b> 2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 14-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 8-13 is/are rejected.
- 7) ☒ Claim(s) 5-7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12-15-03</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of invention I in the reply filed on April 17, 2006 is acknowledged.

### ***Claim Objections***

2. A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim.

A claim which depends from a dependent claim should not be separated by any claim which does not also depend from said dependent claim. It should be kept in mind that a dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n).

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 8, 9, and 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Lengyel (U.S. Patent 6,016,150).
5. As to claim 1, Lengyel discloses:

determining that each sample of a subset of samples is associated with an equivalent degree of shadowing (col. 25, line 63-col. 26, line 7; a preprocessor judges whether a shadow map is equivalent or near-equivalent for a subsequent frame);

generating an indicator representing said degree of shadowing associated with said subset of samples (col. 25, line 63-col. 26, line 7; the shadow map is an indicator and contains shadow values which could also be construed as indicators).

6. As to claim 2, Lengyel discloses a method wherein each sample of a subset of samples is contiguous with other samples of a subset (col. 25, line 63-col. 26, line 7; the samples are contiguous in the time dimension).

7. As to claim 3, Lengyel discloses transmitting an indicator to decrease an amount of data traffic (col. 26, lines 17-45; reusing a shadow map instead of re-rendering would decrease the amount of data traffic through a renderer).

8. As to claim 8, Lengyel discloses a method comprising:

forming an indicator having a first value if a subset is associated with a first degree of shadowing;

and forming said indicator having a second value if a subset is associated with a second degree of shadowing (col. 25, line 63-col. 26, line 7; shadow maps are used and shadow maps inherently have different values where different degrees of shadowing are used).

9. As to claim 9, Lengyel discloses a method comprising:

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forming an indicator having a first value if a subset is associated with a first degree of shadowing;

forming multiple indicators each having one of multiple values if a subset is associated with multiple degrees of shadowing (col. 25, line 63-col. 26, line 7; shadow maps are comprised of values that are multiple indicators indicating multiple degrees of shadowing).

10. As to claim 11, Lengyel discloses a method wherein an indicator further comprises a location identifier on a view plane where a subset is rendered (col. 25, line 63-col. 26, line 7; shadow maps inherently map a location to a shadowing degree).

11. As to claim 12, Lengyel discloses a method wherein an indicator is configured to cause a rendering process to forego an update to a frame buffer (col. 6, lines 24-44 disclose a frame buffer functional equivalent in the form of a "layered pipeline"; col. 26, lines 46-67 disclose reusing a shadow in a layer without updating)

12. As to claim 13, Lengyel discloses a method wherein an indicator is configured to cause a rendering process to forego a computation in rendering a shadow (col. 26, lines 46-67 disclose reusing a shadow in a layer without re-rendering a shadow image).

### ***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to

be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lengyel in view of Corbetta (U.S. Patent 6,903,741).

15. As to claim 4, Lengyel discloses a method with a degree of shadowing (see rejection of claim 1) but does not disclose that this degree corresponds to a number of stencil shadow volumes associated with a subset. Corbetta, however, discloses degrees of shadowing that correspond to stencil shadow volumes associated with a set (col. 5, lines 13-23; stencil values are used to determine whether a pixel has no shadow, full shadow, or a "soft shadow"). The motivation for this is to provide smooth-looking shadows without overtaxing hardware (col. 1, lines 42-65; col. 2, lines 50-63). It would have been obvious to one skilled in the art to modify Lengyel to use degrees of shadowing corresponding to shadow stencil volumes in order to efficiently provide soft shadows as taught by Corbetta

16. As to claim 10, Lengyel discloses a method wherein:

a first degree of shadowing represents that each sample of a subset is illuminated and wherein a second degree represents that each sample is shadowed (col. 25, line 63-col. 26, line 7; shadow maps, by definition, represent which samples are illuminated or shadowed).

Lengyel does not disclose a method wherein a second degree of shadowing represents that each sample of a subset is associated with one or more stencil shadow volumes (col. 5, lines 13-23; stencil values are used to

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determine whether a pixel has no shadow, full shadow, or a "soft shadow"). The motivation for combining the two references can be found in the rejection of claim

***Allowable Subject Matter***

17. Claims 5-7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

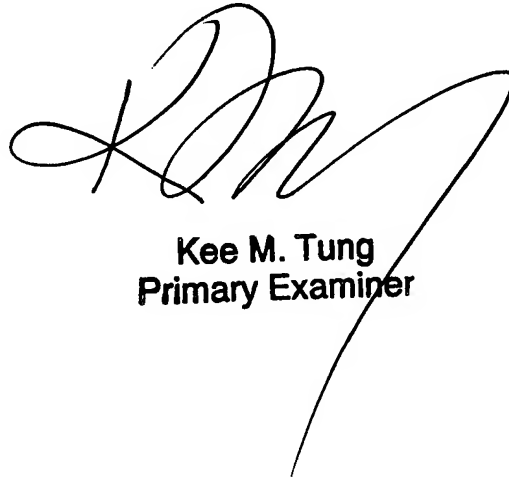
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron M. Richer whose telephone number is (571) 272-7790. The examiner can normally be reached on weekdays from 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung can be reached on (571) 272-7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AMR  
5/24/06



**Kee M. Tung**  
**Primary Examiner**